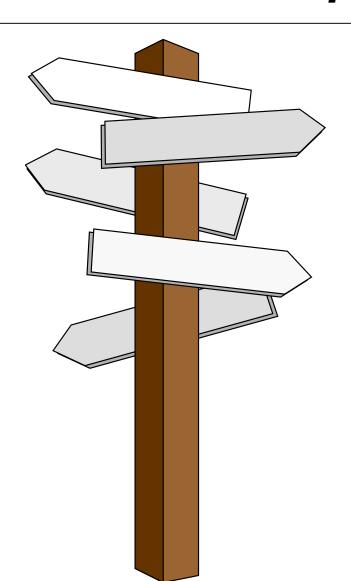
Chapter 7

Feature and Crash Mileposting



Mileposts

- Used to determine where a crash occurred on the roadway in relation to features (Intersections, Structures, etc.)
- Allows TEAAS to locate crashes and identify locations
- Location information from crash reports combined with feature mileposts is used to calculate milepost values for crashes (high order milepost and/or on road milepost)
- Allows TEAAS to locate ordinances and check for overlaps

Mileposts

- Means of specifying a location along a roadway (measured in miles)
- Mileposts are imaginary distance markers that follow the contour of the roadway
- Each route has defined "beginning" and "ending" points
- Beginning milepost is usually 0.00 and ending milepost is equal to the total length of the route (added to the beginning milepost)
- Feature mileposts are usually rounded to the nearest hundredths of a mile

Types of Mileposts

Feature Mileposts (Route Mileposting)

- Locates features along route
- Mileposted features:
 - Intersections Mile Markers
 - Boundaries At-Grade Rail Road Crossings
 - Structures
- The features report is a listing of all mileposted features

Crash Mileposts

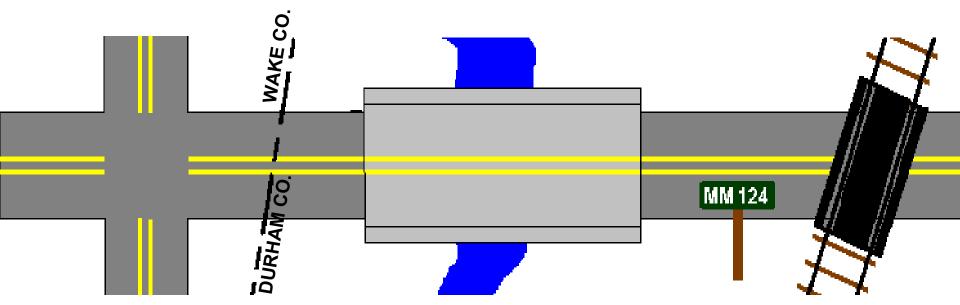
- Locates crashes along route
- Directly dependant on feature mileposting
- Crashes cannot be mileposted if the crash report references a feature that is not mileposted

Mileposted Features

Features that get assigned a milepost value are:

- ntersections Boundaries
- Structures
- Aile Markers
- Railroads

- intersection with another route
- political boundaries
- structures carrying the route (i.e. culvert)
- route mileage values (not county specific)
- at-grade railroad track crossings



Mileposting Rules

Use good judgement

Based on NCDOT's Universe File (MLI1)

Milepost routes south to north and/or west to east

MP₂ = MP₁ + (distance between feature₁ and feature₂)

Assign mileposts to all standard features

Use all possible maps to identify features and listances

If there is a coinciding route, it must also be checked and/or mileposted

Provide ample documentation

NCDOI Universe File (MLI1)



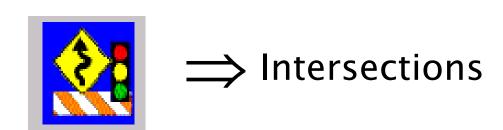
_		(0 91 F	ROUTE 2	200	964			PI	RINO	CIPAL	DATA			PΑ	GE	1
IDENT	CO	ROUTE			Ι	TERMINAL											
			POST	LEN	С	DESCRPTION	SHSE	TΩ	TOWN	U	IYIT	LWID	ΤY	T	AD		
202100	91	20064	00.00	02.42	1	FR CHAT CO	115	1	05	7	98MA	4048	63	5		04200	90
202110	91	20064	02.42	00.11	1		315	1	0501	27	98MA	4048	63	5		04200	90
202120	91	20064	02.53	01.18	1		315	1	0501	27	98MA	4048	63	5		04200	90
202130	91	20064	03.71	00.15	1	URBAN BDRY	115	1	05	7	86RS	4048	63	5		04200	90
202140	91	20064	03.86	00.01	1		315	1	0501	27	86RS	4048	63	5		04200	90
202150	91	20064	03.87	00.19	1	NC 55	315	1	0501	27	86RS	4048	63	5		03000	90
202160	91	20064	04.06	00.24	1		315	1	0501	27	86RS	4048	63	5		03000	90
202170	91	20064	04.30	00.17	1		115	1	05	7	86RS	4048	63	5		03000	90
202180	91	20064	04.47	00.25	1		115	1	05	7	96RB	4048	63	5		03000	90
202190	91	20064	04.72	00.75	1	SR 1011	115	1	05	7	96MA	4048	63	5		03000	90
202200	91	20064	05.47	00.31	1		115	1	05	7	96MA	4048	63	5		03000	90
202210	91	20064	05.78	00.34	1		115	1	05	7	96MA	4048	63	5		03000	90
202220	91	20064	06.12	00.12	1		115	1	05	7	94MA	4048	63	5		03200	90
202230	91	20064	06.24	00.11	1		115	1	05	7	94MA	4048	63	5		03200	90
202240	91	20064	06.35	00.32	1		315	1	0501	27	94MA	4048	63	5		03200	90
202250	91	20064	06.67	00.02	1	WCL APEX	115	1	05	7	94MA	4048	63	5		03200	90
202260	91	20064	06.69	00.55	1	ECL APEX	315	1	0501	27	94MA	4048	63	5		03200	90
MESSAGE	==;	PF1=F	PAGE FV	√D F	F2	2=RESTART	PF8	3=1	1INOR	DAT	A	PF4=f	ACCE	SS	SC	REEN	
м <u>А</u> + а																01/00	03

PF1 PF2 PF3 PF4 PF5 PF6 Enter PA1 Attn Insert NewLine

Intersection Features

• Used to search for and view location information for intersections on an inventoried route.

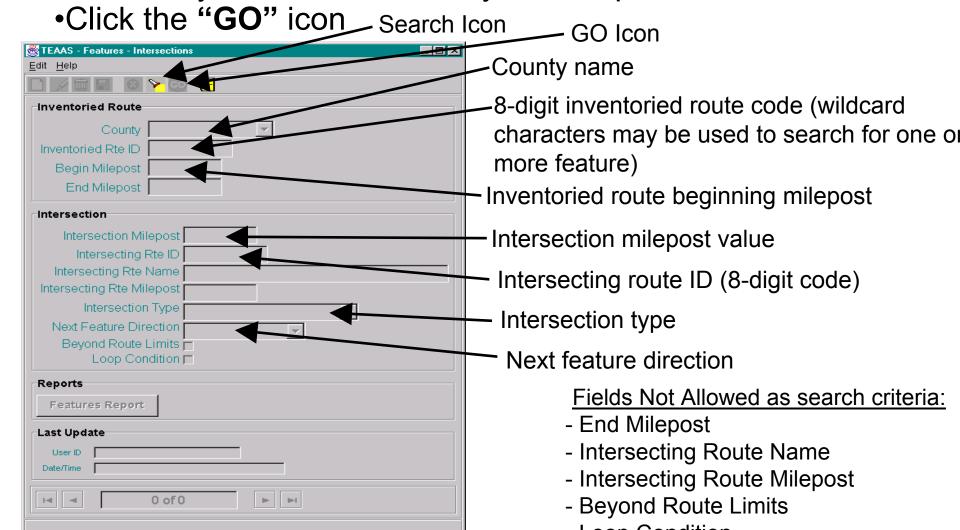
 Access the "Features - Intersections" screen by selecting the following:



Intersection Features (Cont.)

To search for Intersections

- Click the "Search" icon
- Enter search criteria
- Leave any criteria blank if they are not part of the search



Intersection Features (Cont.)

- •Click the "**OK**" button on the records retrieved dialog box to view the records retrieved.
- •If no records are returned, verify that the search criteria are correct.
- •A new search may be executed by adjusting the search criteria and clicking the "GO" icon.
- •TEAAS will display a maximum of 500 records for any given search, although more than 500 records may actually meet the search criteria.

Intersection Features Example

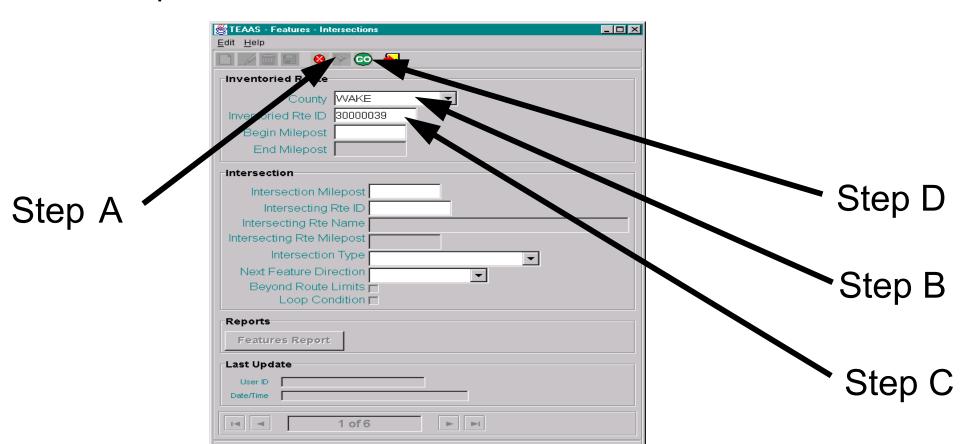
Suppose you wanted to search the intersections on NC 39 in Wake county

Step A: Click on the "Search" icon

Step B: Enter the county (Wake)

Step C: Enter the inventoried route ID (30000039)

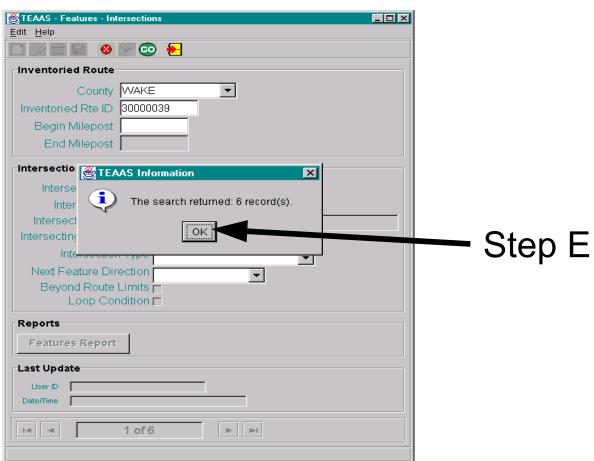
Step D: Click the "GO" icon.



Intersection Features Example (Cont.)

- If matches are found, a dialog box will indicate the number of matched records (note wildcards and other criteria can return more than one record).
- If no matches are found, try using other criteria, wildcards, etc.

Step E: Click on the "OK" button and view the records.



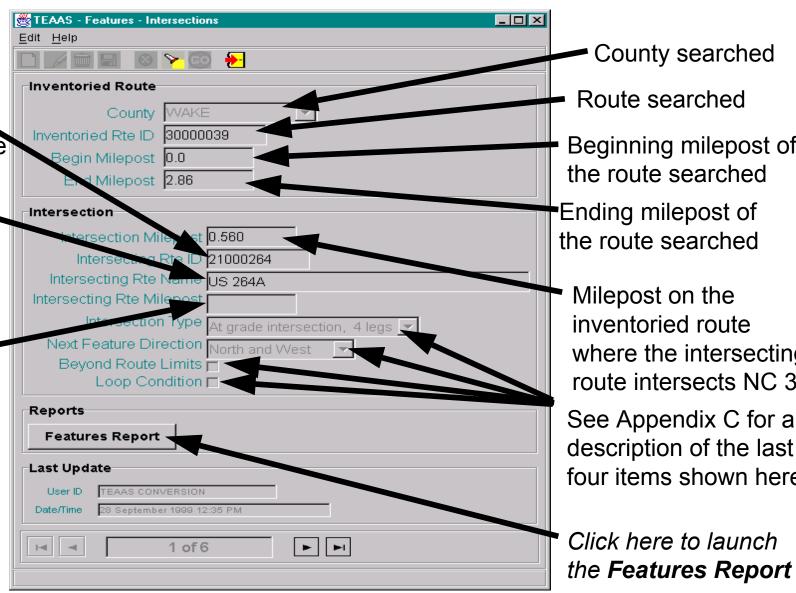
Reading the Intersection Features Screen

-digit code of tersecting route

lame attached the 8-digit ode of the attersecting oute

the stersecting oute is nileposted, the stersecting oute's milepost oute's milepost would be shown

ere



Other Roadway Feature Screens



Used to search for and view location information for political boundaries that cross an inventoried route



Used to search for and view location information for structures (bridges, culverts, tunnels, ferry landings, etc.)



Used to search for and view location information for mile markers.



Railroad Crossing

Used to search for and view location information for atgrade railroad crossings

Review: Milepost, Mileage, Mile Marker

Milepost - the distance, in miles, from the beginning of an inventoried route to a feature on that route (i.e. SR 1002 on I 40 in Wake County is 2.21 miles from the beginning of I 40 in Wake County and, therefore, has a milepost of 2.21)

Mileage (1) - the distance, in miles, from one feature to another on an inventoried route (i.e. the distance on I 40 in Wake County between the Durham County Line and SR 1002 is 2.21 miles)

Mileage (2) - the total length of an inventoried route in a specific county (i.e. the total length of I 40 in Wake County is approximately 29.18 miles)

Mileage (3) - the total length of a route within the state (i.e. interstate 40 is approximately 420 miles long)

Mile Marker - sign indicating the distance, in miles, from the beginning of a route within the state to the sign (i.e. mile marker 145 on I 40 is approximately 145 miles from the Tennessee State Line)

Features Report

- Feature records are county specific
- The features report shows all mileposted features on an inventoried route
- Used in crash analyses to determine the location of a crash in relation to mileposted roadway features
- There are several ways to run a features report within TEAAS

Features Report Example

North Carolina Department of Transportation Traffic Engineering Accident Analysis System Features Report

County		Inventoried Route ID	Begin Milepost	End Milepost							
WAKE		20000064	0.0	44.340							Beyon
MP No	FeatureID	Feature Name/Type	Special Ty	ype			istance o Next	Direction to Nex			Rte Limits
0.000	70000018	CL-CHATHAM					0.230 No:	rth and	East		
0.230	50034086	TWO POND	At grade	intersection,	3 :	leg	0.420 No	rth and	East	,	
0.650	50013376	HATTIE	At grade	e intersection,	3 :	leg	0.110 No:	rth and	East		
0.760	50017261	LAWSON	At grade	intersection,	3 :	leg	0.150 No:	rth and	East		
0.910	50034087	FLYING HAWK	At grade	intersection,	3 :	leg	0.210 No	rth and	East	,	
1.120	910002	Structure	Bridge				0.200				
1.320	40001602	SR 1602	At grade	intersection,	3 :	leg	0.000 No	rth and	East	•	
1.320	50012145	GOODWIN	At grade	intersection,	3 :	leg	0.080 No:	rth and	East	•	
1.400	50000278	AIRPARK	At grade	intersection,	3 :	leg	0.330 No	rth and	East	•	
1.730	40001601	SR 1601	At grade	e intersection,	3 :	leg	0.000 No	rth and	East		
1.730	50015388	J enk s	At grade	intersection,	3 :	leg	1.240 No	rth and	East	•	
2.970	40001163	SR 1163	At grade	e intersection,	4 .	leg	0.000 No	rth and	East		
2.970	50016074	KELLY	At grade	e intersection,	4 :	leg	0.720 No	rth and	East	-	
1											ļ

Features Report Example (cont.)

- County county where mileposted route exists
- Inventoried Route ID 8-digit route code
- Begin Milepost beginning milepost of the route
- End Milepost ending milepost of the route
- MP No milepost value for the given feature
- FeatureID
 - 8-digit code for roads, boundaries, and mile markers
 - 6-digit code for structures
 - 7-digit code for at-grade railroad crossings

Features Report Example (cont.)

Feature Name/Type - preferred name of the eature

Special Type - intersection or structure type

Distance to Next - distance from one feature to the next feature following the route's direction

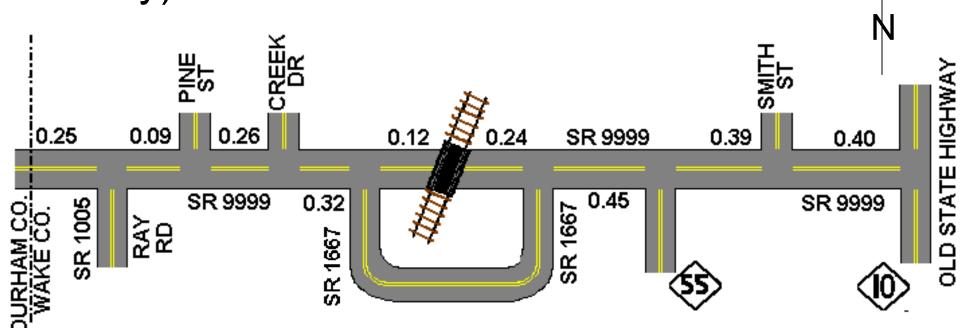
Direction to Next - direction from one feature to the next feature

Loop - flag to indicate if a feature intersects the oute more than once ("Y" or blank)

Beyond Rte Limits - flag to indicate if the feature is outside of the inventoried route limits ("Y" or blank)

Route Mileposting Exercise

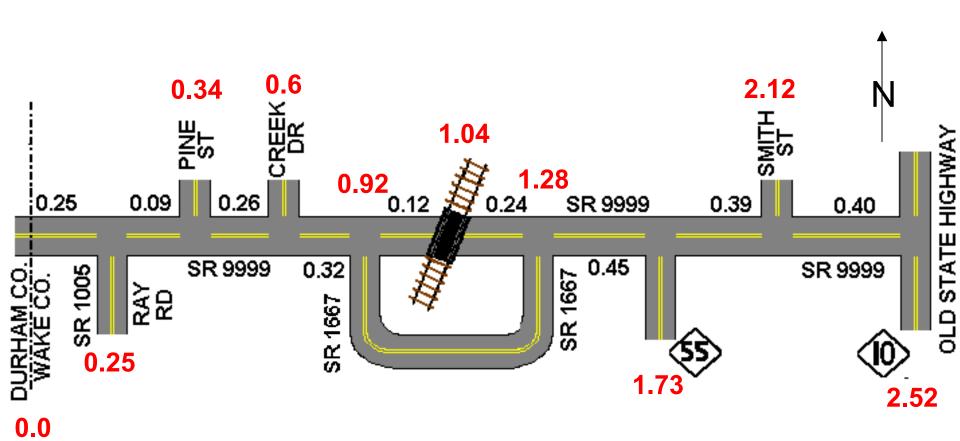
Milepost the example route (SR 9999 in Wake County) shown below:



Note:

- Distance between the features is given in miles.
- Start at the Durham County line with Milepost 0.00
- Calculate rest of mileposting from west to east

Route Mileposting Exercise Answers



Non-Mileposted Routes

If a given route is not already mileposted there are two options:

- 1. Determine mileposts for route features and manually calculate the milepost for each crash
- 2. Determine mileposts for route features and submit them to a Secondary Data Maintainer (SDM) to permanently enter into TEAAS. After the route mileposting is entered into TEAAS, mileposting for crashes along that route are automatically calculated within 24 hours.

Crash Mileposting Information

- Crashes are mileposted (located) using location information on DMV-349 crash reports
- Location Information used:
 - Road On Road name or route where the crash occurred From Road - road name or route of an intersecting road near the crash
 - **Distance From** Distance between crash and From Road **Direction From** Direction of crash from the From Road **Towards Road** Next intersecting road in the Direction

Crashes are usually between the From Road and Towards Road

From from the From Road

Crash Location Visualization

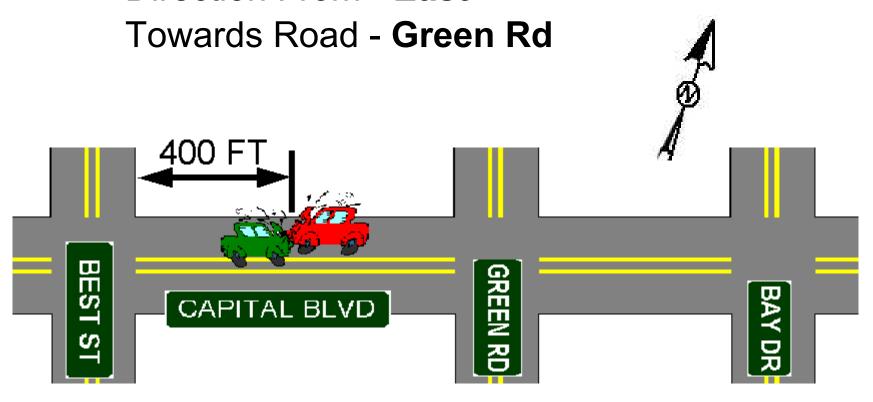
Example below could be described as:

Road On - Capital Blvd

From Road - Best St

Distance From - 400 ft

Direction From - East



Crash Location Visualization (cont.)

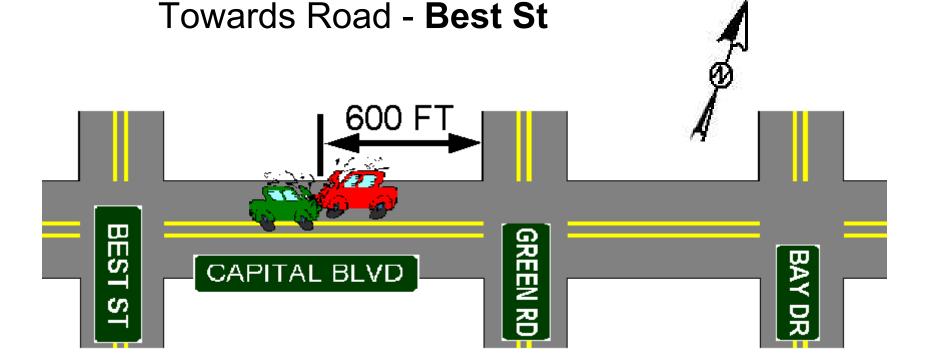
Example below could also be described as:

Road On - Capital Blvd

From Road - Green Rd

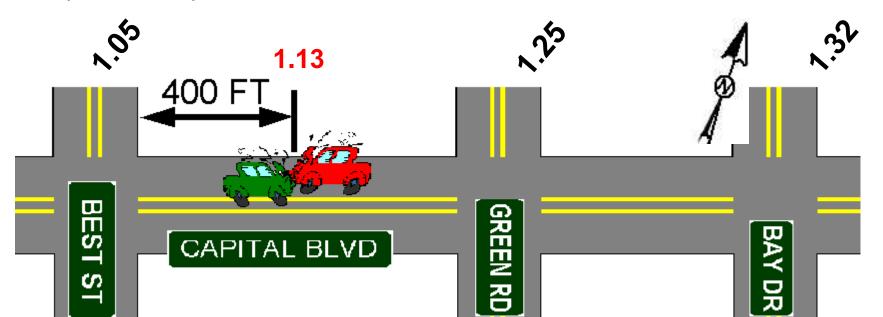
Distance From - 600 ft

Direction From - West



Crash Mileposting Example

- Assume Mileposted features on Capital Blvd are:
 - Best St = 1.05
 - Green Rd = 1.25
 - Bay Dr = 1.32
- The example crash would be mileposted as follows:
 - The crash occurred 400 feet (or 0.08 miles) east of Best Street (MP 1.05), so the milepost is calculated to be 1.05 + 0.08 = 1.13



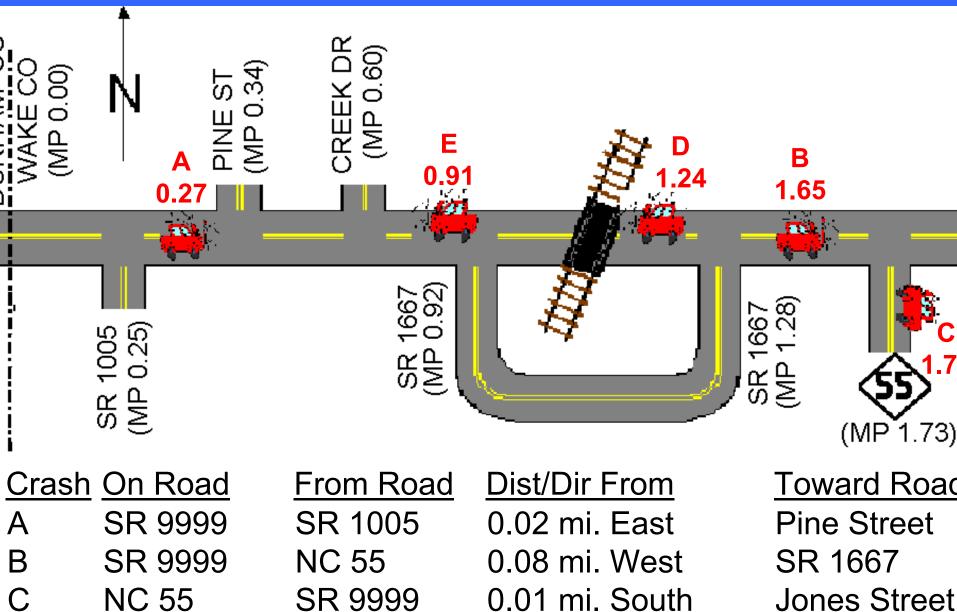
Crash Mileposting Exercise

Given the following route	mileposts for SR 9999:
---------------------------	------------------------

<u>MP</u>	Road		<u>Dir to Next</u>				
0.00	Durham Co/	Wake Co Line	East				
0.25	SR 1005		East				
0.34	Pine St		East				
0.60	Creek Drive		East				
0.92	SR 1667		East				
1.28	SR 1667		East				
1.73	NC 55		East				
What are the mileposts for the following crashes?							
On Rd	From Rd	Dist/Dir From	Toward Rd				

On Rd	From Rd	Dist/Dir From	Toward Rd
SR 9999	SR 1005	0.02 mi East	Pine St
SR 9999	NC 55	0.08 mi West	SR 1667
NC 55	SR 9999	0.01 mi South	Jones St
SR 9999	SR 1667	0.04 mi West	SR 1667
SR 9999	SR 1667	0.01 mi West	Creek Dr

Crash Mileposting Exercise (cont.)



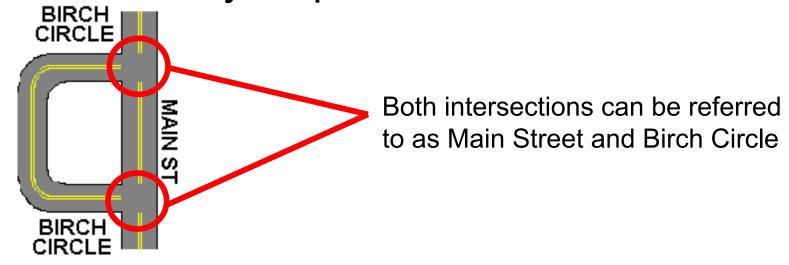
NC 55 SR 9999 0.01 mi. South Jones Street D SR 9999 SR 1667 0.04 mi. West SR 1667 SP agga **SD 1667** $0.01 \, \text{mi} \, \text{Most}$ Crook Drive

Loops

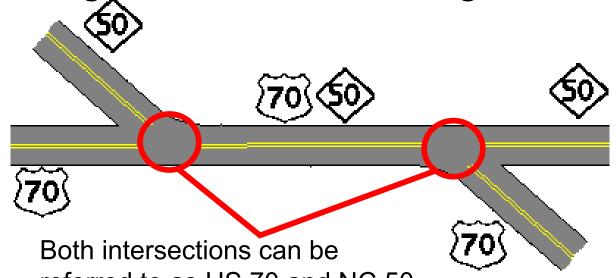
- Occurs when a feature intersects a route more than once
- Creates problems for locating crashes properly, since two different locations can be specified with the same intersection combinations
- Towards roads are usually helpful in determining at which end of the loop the crash occurred
- If a study location includes loops, some crashes will have to be manually reviewed to determine where they actually occurred

Loop Examples

Road that actually loops back onto another road

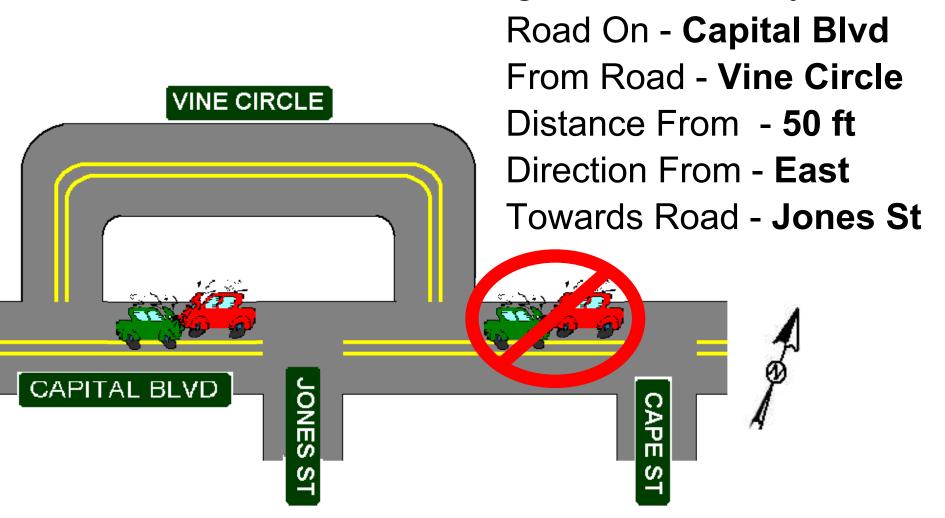


Coinciding routes that converge and diverge



Crash Location Near A Loop

Where did the following crash actually occur:



Use the **Towards Road** to determine on which loop intersection the crash occurred

Unmileposted Crashes

Some crashes in TEAAS do not milepost because:

- The Road On is not an inventoried route
- The Road On is not mileposted
- The From Road is not a mileposted feature
 - Roads being built faster than records can be updated
 - Police officers reference features that are not mileposted (i.e. McDonald's, Wal-Mart parking lot, PVA, etc.)
- The From Road is a loop
- The crash has not been reviewed by the daily nileposting routine program